Java Assignment 5

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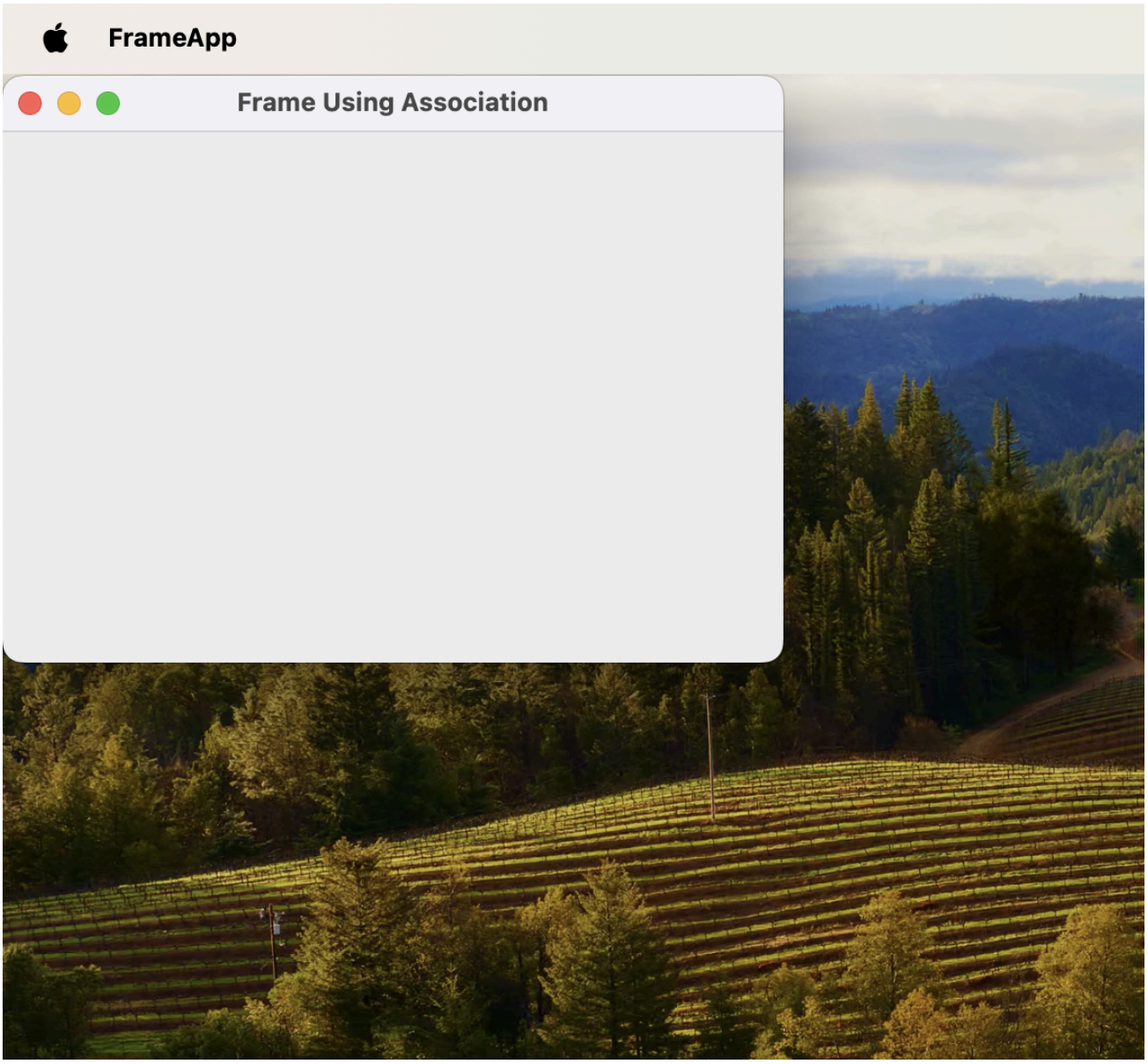
Roll no: 25

Q1. WAP to create a frame using Association.

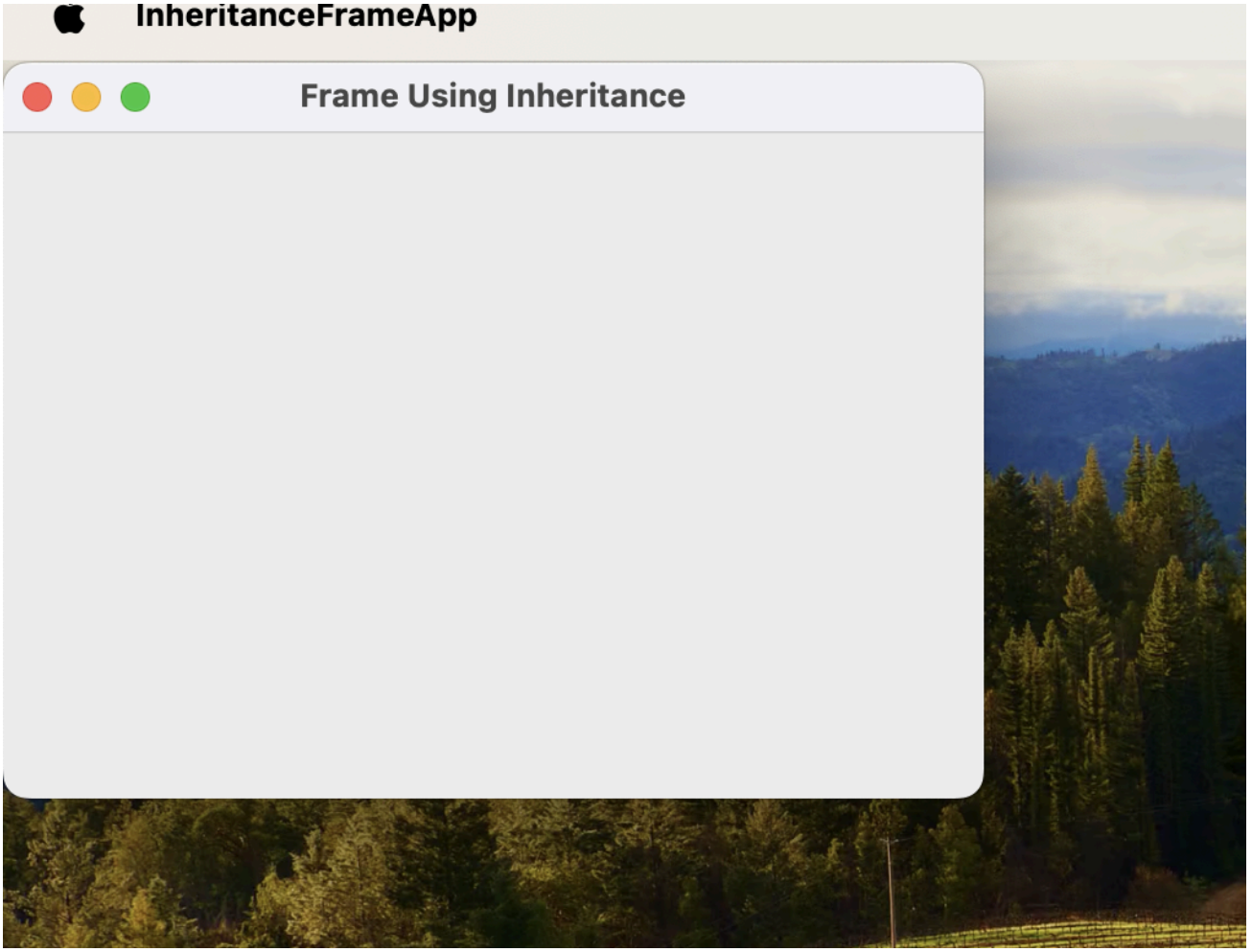
```
import javax.swing.JFrame;
class FrameCreator {
   private JFrame frame;

   public FrameCreator() {
      frame = new JFrame("Frame Using Association");
   }

   public void setupFrame() {
      frame.setSize(400, 300);
      frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      frame.setVisible(true);
   }
}
public class FrameApp {
   public static void main(String[] args) {

      FrameCreator frameCreator = new FrameCreator();

      frameCreator.setupFrame();
   }
}
```



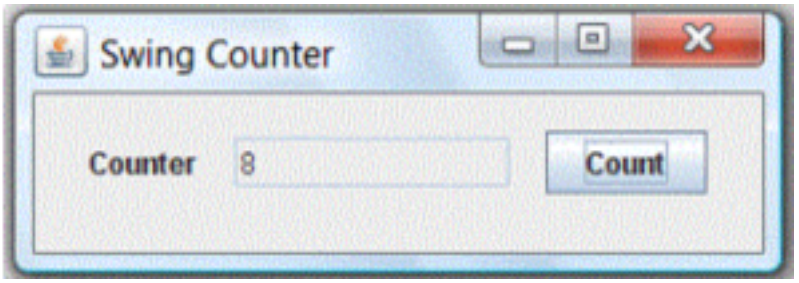
Q2. WAP to create a frame using Inheritance.

```
import javax.swing.*;
class CustomFrame extends JFrame {
    public CustomFrame() {
        setTitle("Frame Using Inheritance");
        setSize(400, 300);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setVisible(true);
    }
}
public class InheritanceFrameApp {
    public static void main(String[] args) {

        CustomFrame customFrame = new CustomFrame();
```

```
    }
}
```

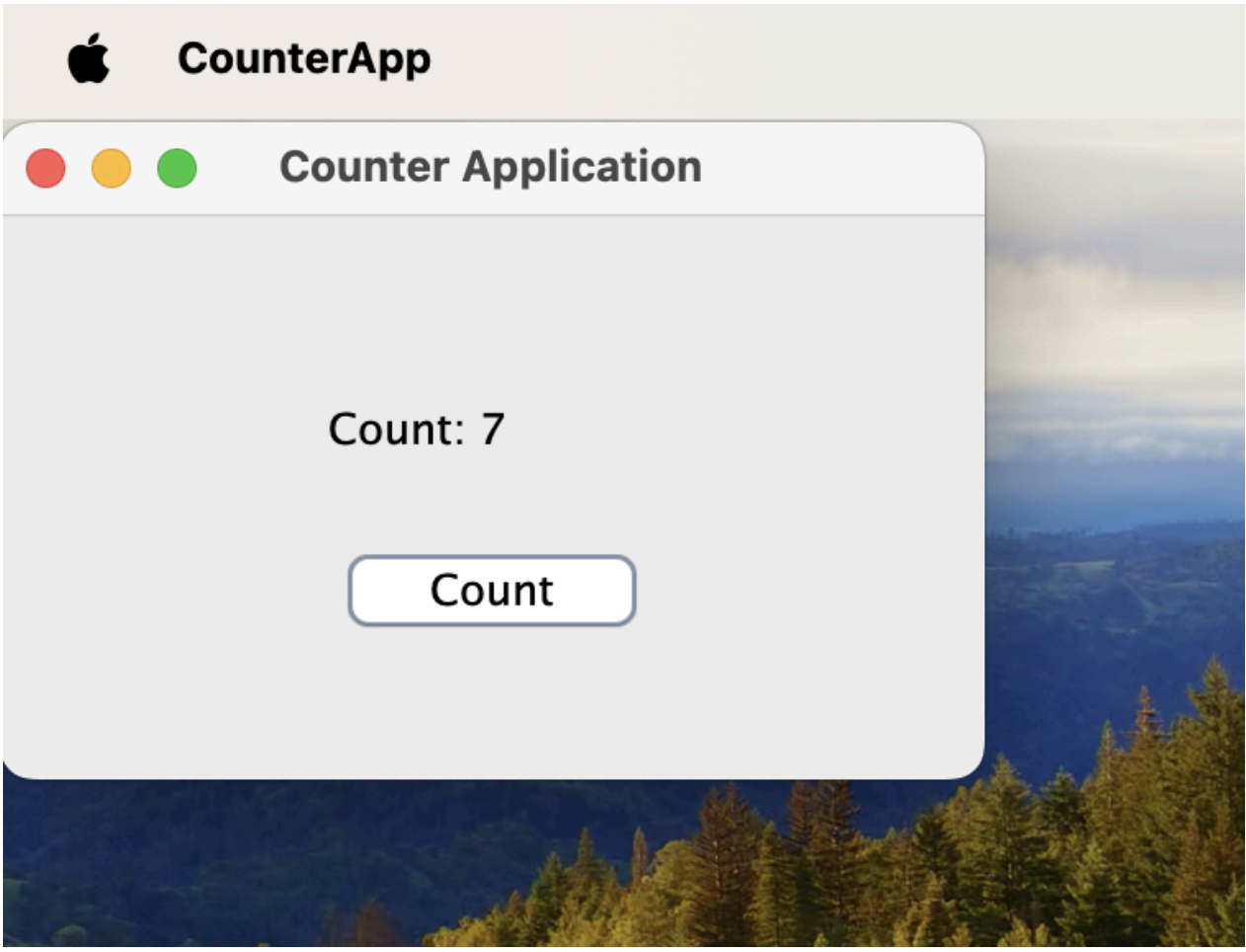


Q3. Write an swing GUI application as shown in the Figure. Each time the "Count" button is clicked, the counter value shall increase by 1.

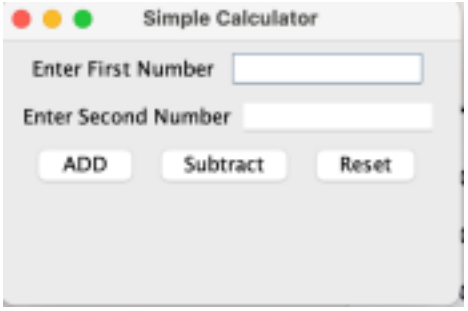



```
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
public class CounterApp extends JFrame {
```

```
    private int count = 0;
    private JLabel label;
    private JButton button;
    public CounterApp() {
        setTitle("Counter Application");
        setSize(300, 200);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setLayout(null);
        label = new JLabel("Count: " + count);
        label.setBounds(100, 50, 100, 30);
        add(label);
        button = new JButton("Count");
        button.setBounds(100, 100, 100, 30);
        button.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent e) {
                count++;
                label.setText("Count: " + count);
            }
        });
        add(button);
        setVisible(true);
    }
    public static void main(String[] args) {
        new CounterApp();
    }
}
```



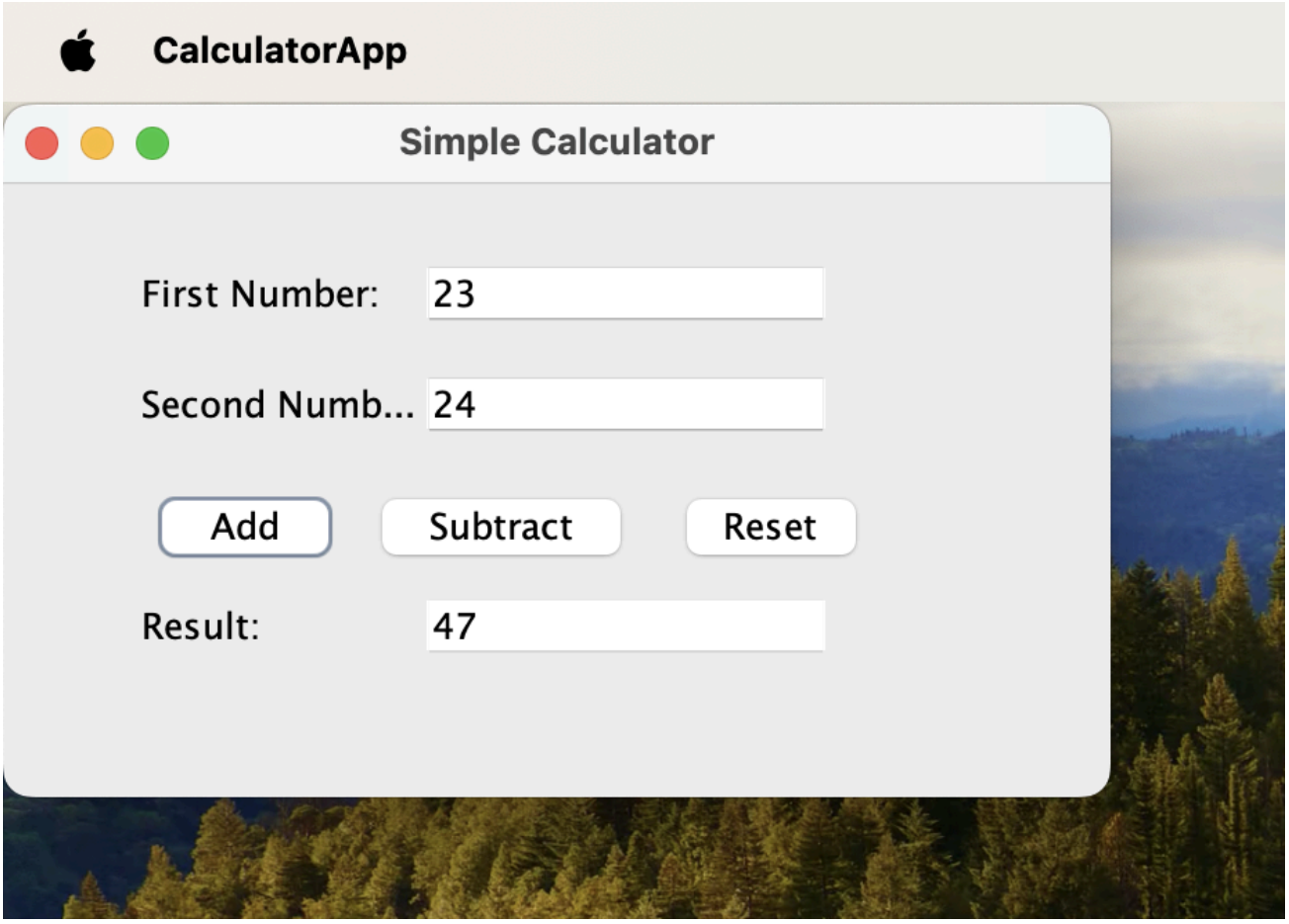
Q4. Write a Swing application to design a basic calculator to add and subtract numbers.



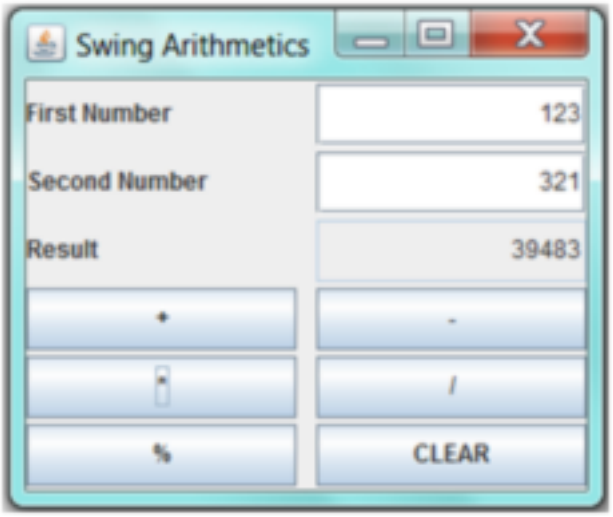

```
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JTextField;
public class CalculatorApp {
public static void main(String[] args) {
```

```
JFrame f = new JFrame("Simple Calculator");

JLabel label1 = new JLabel("First Number:");
label1.setBounds(50, 30, 100, 20);
JLabel label2 = new JLabel("Second Number:");
label2.setBounds(50, 70, 100, 20);
JLabel labelResult = new JLabel("Result:");
labelResult.setBounds(50, 150, 100, 20);

JTextField tf1 = new JTextField();
tf1.setBounds(150, 30, 150, 20);
JTextField tf2 = new JTextField();
tf2.setBounds(150, 70, 150, 20);

JTextField tfResult = new JTextField();
tfResult.setBounds(150, 150, 150, 20);
tfResult.setEditable(false);

JButton btnAdd = new JButton("Add");
btnAdd.setBounds(50, 110, 75, 30);
JButton btnSubtract = new JButton("Subtract");
btnSubtract.setBounds(130, 110, 100, 30);
JButton btnReset = new JButton("Reset");
btnReset.setBounds(240, 110, 75, 30);

btnAdd.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
try {

int num1 = Integer.parseInt(tf1.getText());
int num2 = Integer.parseInt(tf2.getText());

int sum = num1 + num2;

tfResult.setText(String.valueOf(sum));
} catch (NumberFormatException ex) {
tfResult.setText("Invalid Input");
}
}
});

btnSubtract.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
try {

int num1 = Integer.parseInt(tf1.getText());
int num2 = Integer.parseInt(tf2.getText());

int diff = num1 - num2;
```

```
            tfResult.setText(String.valueOf(diff));
        } catch (NumberFormatException ex) {
            tfResult.setText("Invalid Input");
                }
            }
        });

    btnReset.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {

            tf1.setText("");
            tf2.setText("");
        tfResult.setText("");
                }
            });

            f.add(label1);
            f.add(label2);
              f.add(tf1);
              f.add(tf2);
          f.add(labelResult);
            f.add(tfResult);
            f.add(btnAdd);
          f.add(btnSubtract);
            f.add(btnReset);
          f.setSize(400, 250);
           f.setLayout(null);
           f.setVisible(true);
f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
                }
            }
```



Q5.Create a Swing application that include buttons "+", "−", "*", "/", "%" (remainder) and "CLEAR" as shown and perform arithmetic operations.

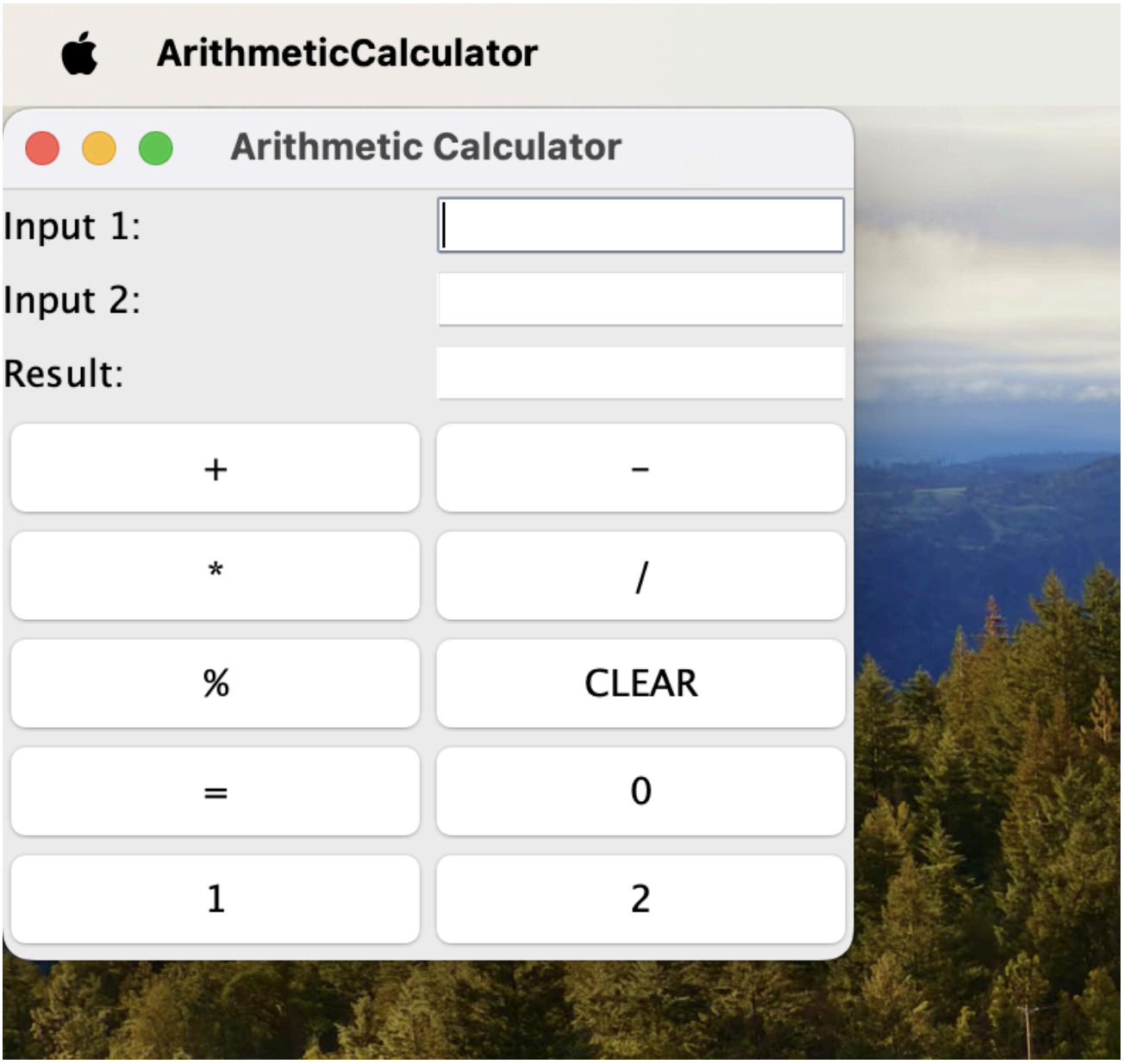


import java.awt.BorderLayout;

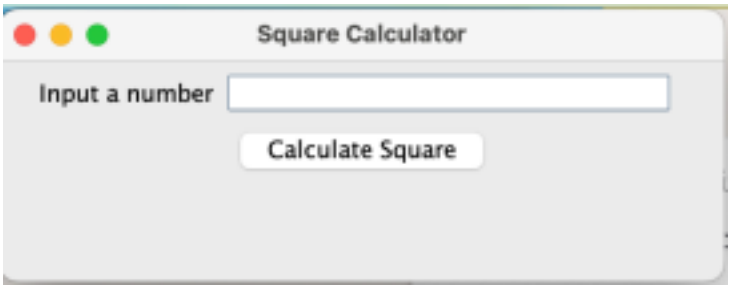
```
import java.awt.GridLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JPanel;
import javax.swing.JTextField;
public class ArithmeticCalculator extends JFrame {
private JTextField inputField1;
private JTextField inputField2;
private JTextField resultField;
private double num1, num2, result;
private String operator;
public ArithmeticCalculator() {
setTitle("Arithmetic Calculator");
setSize(300, 300);
setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
setLayout(new BorderLayout());
JPanel inputPanel = new JPanel();
inputPanel.setLayout(new GridLayout(3, 2));
inputField1 = new JTextField();
inputField2 = new JTextField();
resultField = new JTextField();
resultField.setEditable(false);
inputPanel.add(new JLabel("Input 1: "));
inputPanel.add(inputField1);
inputPanel.add(new JLabel("Input 2: "));
inputPanel.add(inputField2);
inputPanel.add(new JLabel("Result: "));
inputPanel.add(resultField);
add(inputPanel, BorderLayout.NORTH);
JPanel buttonPanel = new JPanel();
buttonPanel.setLayout(new GridLayout(5, 2));
String[] buttonLabels = {"+", "-", "*", "/", "%", "CLEAR", "=", "0", "1", "2"};
for (String label : buttonLabels) {
JButton button = new JButton(label);
button.addActionListener(new ButtonClickListener());
buttonPanel.add(button);
}
add(buttonPanel, BorderLayout.CENTER);
setVisible(true);
}
private class ButtonClickListener implements ActionListener {
@Override
public void actionPerformed(ActionEvent e) {
String command = e.getActionCommand();
if (command.equals("CLEAR")) {
inputField1.setText("");
inputField2.setText("");
```

```
resultField.setText("");
return;
}
if (command.equals("=")) {
try {
num2 = Double.parseDouble(inputField2.getText());
calculateResult();
} catch (NumberFormatException ex) {
resultField.setText("Invalid input!");
}
return;
}
try {
num1 = Double.parseDouble(inputField1.getText());
operator = command;
inputField1.setText(""); // Clear first input for new calculation
inputField2.setText(""); // Clear second input for new input
} catch (NumberFormatException ex) {
resultField.setText("Invalid input!");
}
}
private void calculateResult() {
switch (operator) {
case "+":
result = num1 + num2;
break;
case "-":
result = num1 - num2;
break;
case "*":
result = num1 * num2;
break;
case "/":
if (num2 != 0) {
result = num1 / num2;
} else {
resultField.setText("Cannot divide by zero!");
return;
}
break;
case "%":
result = num1 % num2;
break;
default:
resultField.setText("Select an operator!");
return;
}
resultField.setText(String.valueOf(result));
}
}
```

```
public static void main(String[] args) {
    new ArithmeticCalculator();
  }
}
```

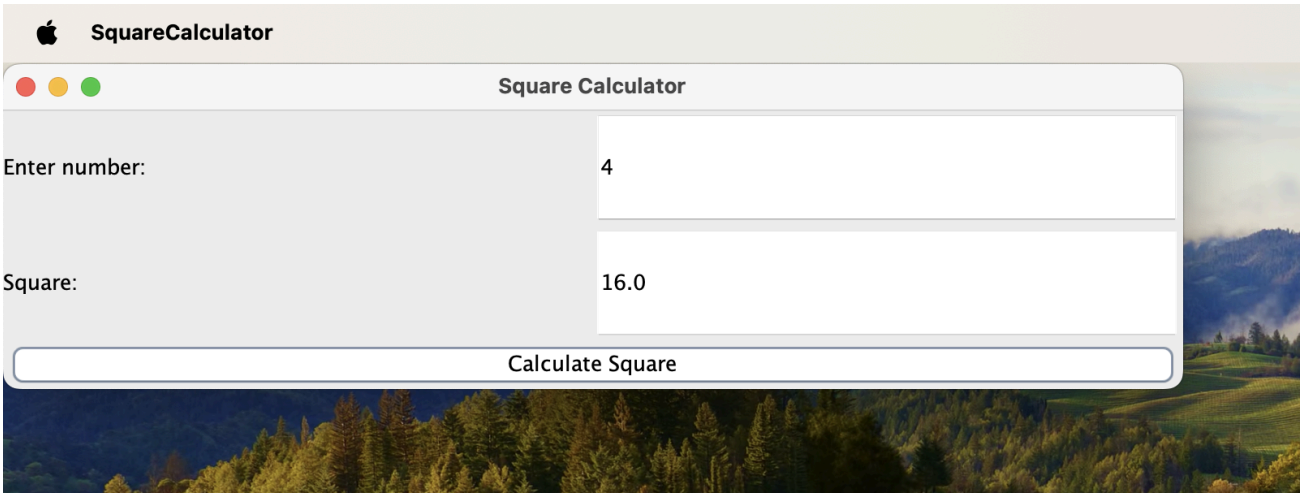


Q6. Create a Swing application that calculates a square of a

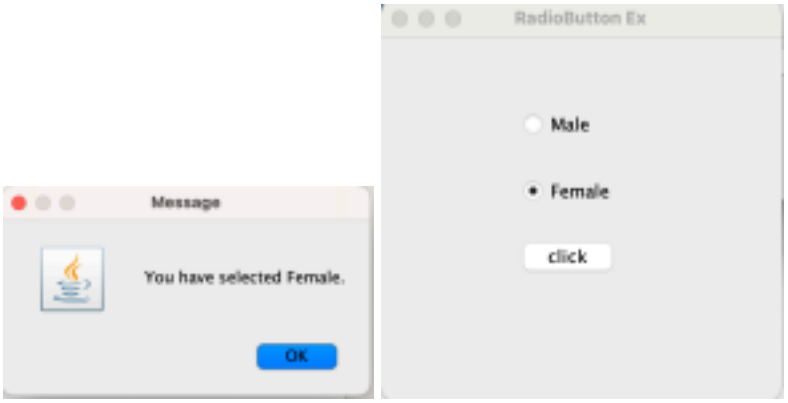
number. 


```
import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
public class SquareCalculator extends JFrame {
    private JTextField inputField;
    private JTextField resultField;
    public SquareCalculator() {
        setTitle("Square Calculator");
        setSize(300, 200);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setLayout(new BorderLayout());
        JPanel inputPanel = new JPanel();
        inputPanel.setLayout(new GridLayout(2, 2));
        inputField = new JTextField();
        resultField = new JTextField();
        resultField.setEditable(false);
        inputPanel.add(new JLabel("Enter number: "));
        inputPanel.add(inputField);
        inputPanel.add(new JLabel("Square: "));
        inputPanel.add(resultField);
        add(inputPanel, BorderLayout.CENTER);
        JButton calculateButton = new JButton("Calculate Square");
        calculateButton.addActionListener(new ButtonClickListener());
        add(calculateButton, BorderLayout.SOUTH);

        setVisible(true);
    }
    private class ButtonClickListener implements ActionListener {
        @Override
        public void actionPerformed(ActionEvent e) {
            try {
                double number = Double.parseDouble(inputField.getText());
                double square = number * number;
                resultField.setText(String.valueOf(square));
            } catch (NumberFormatException ex) {
                resultField.setText("Invalid input");
            }
        }
    }
```

```
    public static void main(String[] args) {
        new SquareCalculator();
    }
}
```

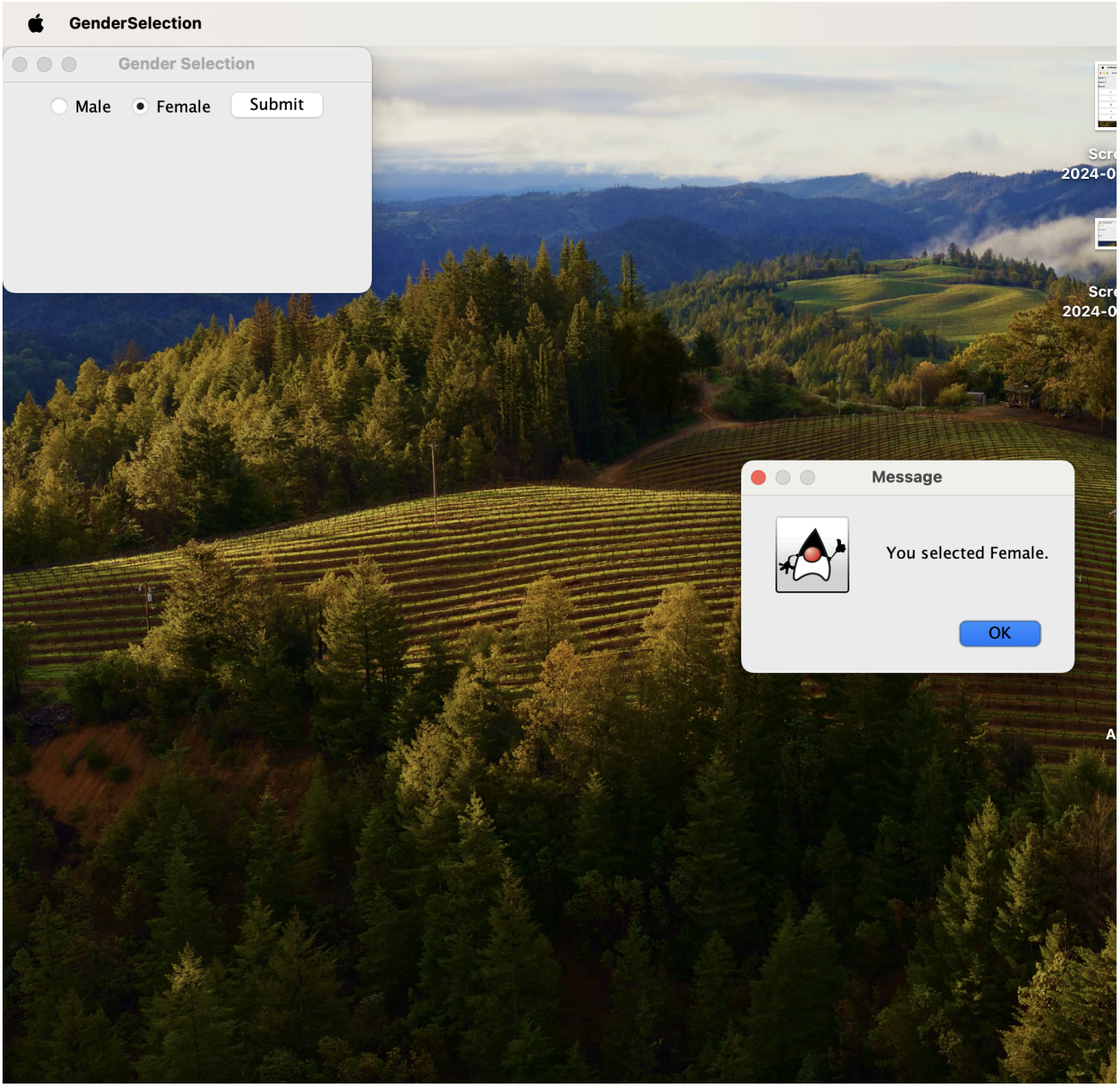


Q7.Create a Swing application that creates two radio button “Male”, “Female”. If a user selects a radio button, the application displays a dialog box as per user’s choice.




```
import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
public class GenderSelection extends JFrame {
    private JRadioButton maleButton;
    private JRadioButton femaleButton;
    private ButtonGroup genderGroup;
    public GenderSelection() {
        setTitle("Gender Selection");
        setSize(300, 200);
```

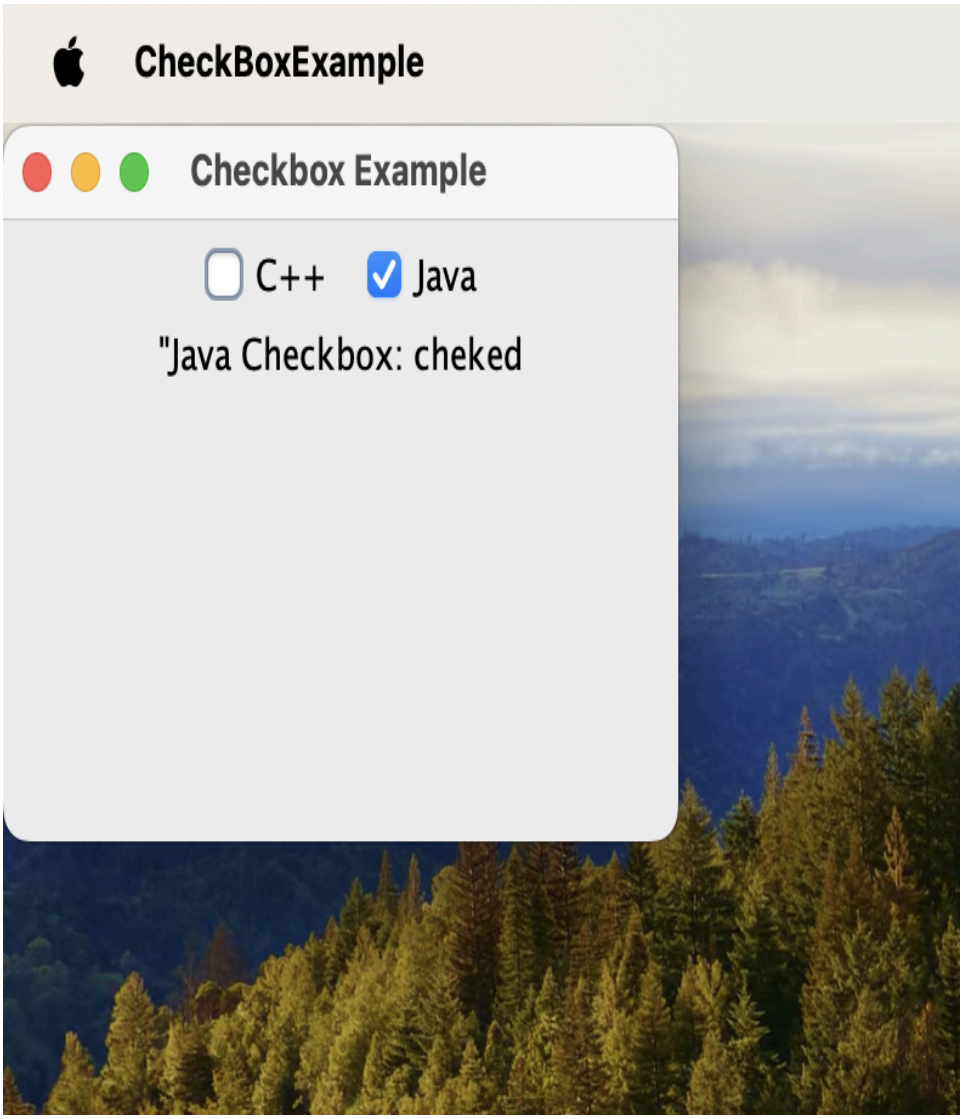
```
setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
setLayout(new FlowLayout());
maleButton = new JRadioButton("Male");
femaleButton = new JRadioButton("Female");
genderGroup = new ButtonGroup();
genderGroup.add(maleButton);
genderGroup.add(femaleButton);
add(maleButton);
add(femaleButton);
JButton submitButton = new JButton("Submit");
submitButton.addActionListener(new ButtonClickListener());
add(submitButton);
setVisible(true);
}
private class ButtonClickListener implements ActionListener {
@Override
public void actionPerformed(ActionEvent e) {
if (maleButton.isSelected()) {
JOptionPane.showMessageDialog(null, "You selected Male.");
} else if (femaleButton.isSelected()) {
JOptionPane.showMessageDialog(null, "You selected Female.");
} else {
JOptionPane.showMessageDialog(null, "Please select a gender.");
}
}
}
public static void main(String[] args) {
new GenderSelection();
}
}
```



Q8.Create a Swing application that creates two check boxes. Depending on the user selection of check boxes, message should be displayed.

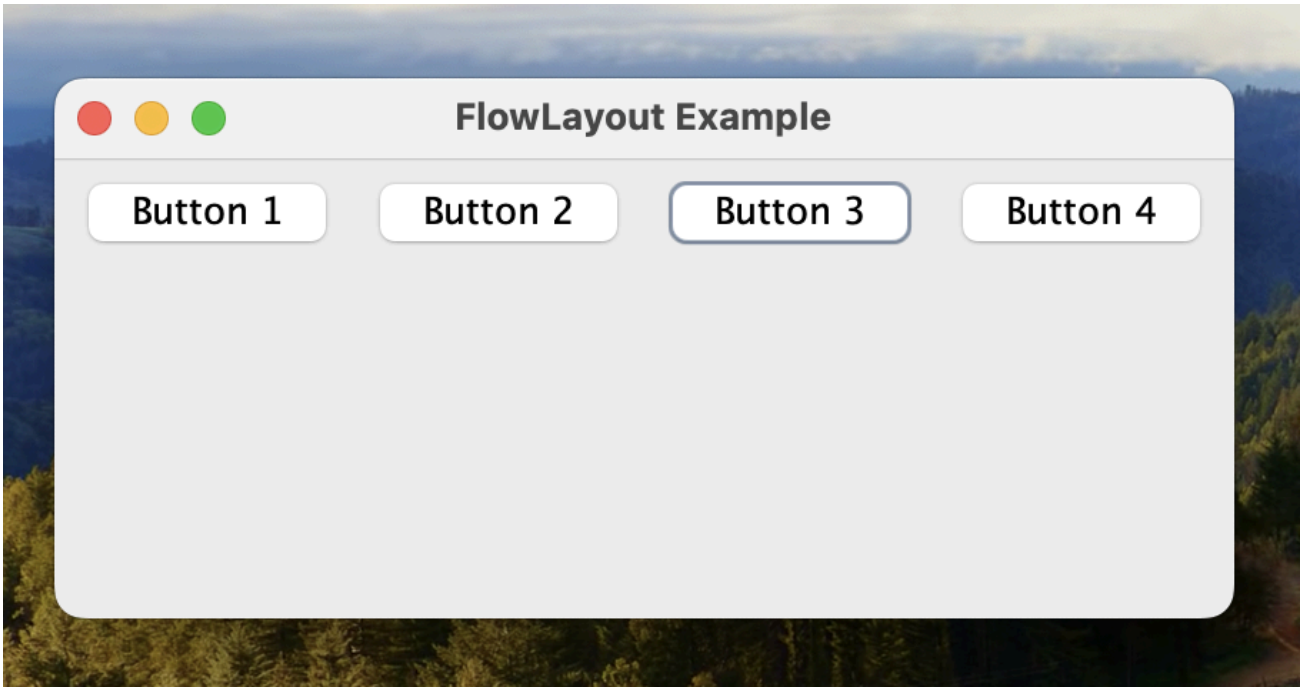

```
import java.awt.FlowLayout;
import java.awt.event.ItemEvent;
import java.awt.event.ItemListener;
import javax.swing.JCheckBox;
import javax.swing.JFrame;
import javax.swing.JLabel;
public class CheckBoxExample extends JFrame implements ItemListener {
   private JCheckBox checkBox1, checkBox2;
   private JLabel label;
   public CheckBoxExample() {
      setTitle("Checkbox Example");
      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      setLayout(new FlowLayout());

      checkBox1 = new JCheckBox("C++");
      checkBox2 = new JCheckBox("Java");

      add(checkBox1);
      add(checkBox2);

      label = new JLabel();
      add(label);

      checkBox1.addItemListener(this);
      checkBox2.addItemListener(this);
      pack();
      setVisible(true);
   }
   @Override
   public void itemStateChanged(ItemEvent e) {

      boolean option1Selected = checkBox1.isSelected();
      boolean option2Selected = checkBox2.isSelected();

      if (option1Selected && option2Selected) {
```

```
            label.setText("Both options are selected.");
        } else if (option1Selected) {
            label.setText("C++ Checkbox: cheked");
        } else if (option2Selected) {
            label.setText("\"Java Checkbox: cheked");
        } else {
            label.setText("No options are selected.");
        }
    }
    public static void main(String[] args) {
        new CheckBoxExample();
    }
}
```



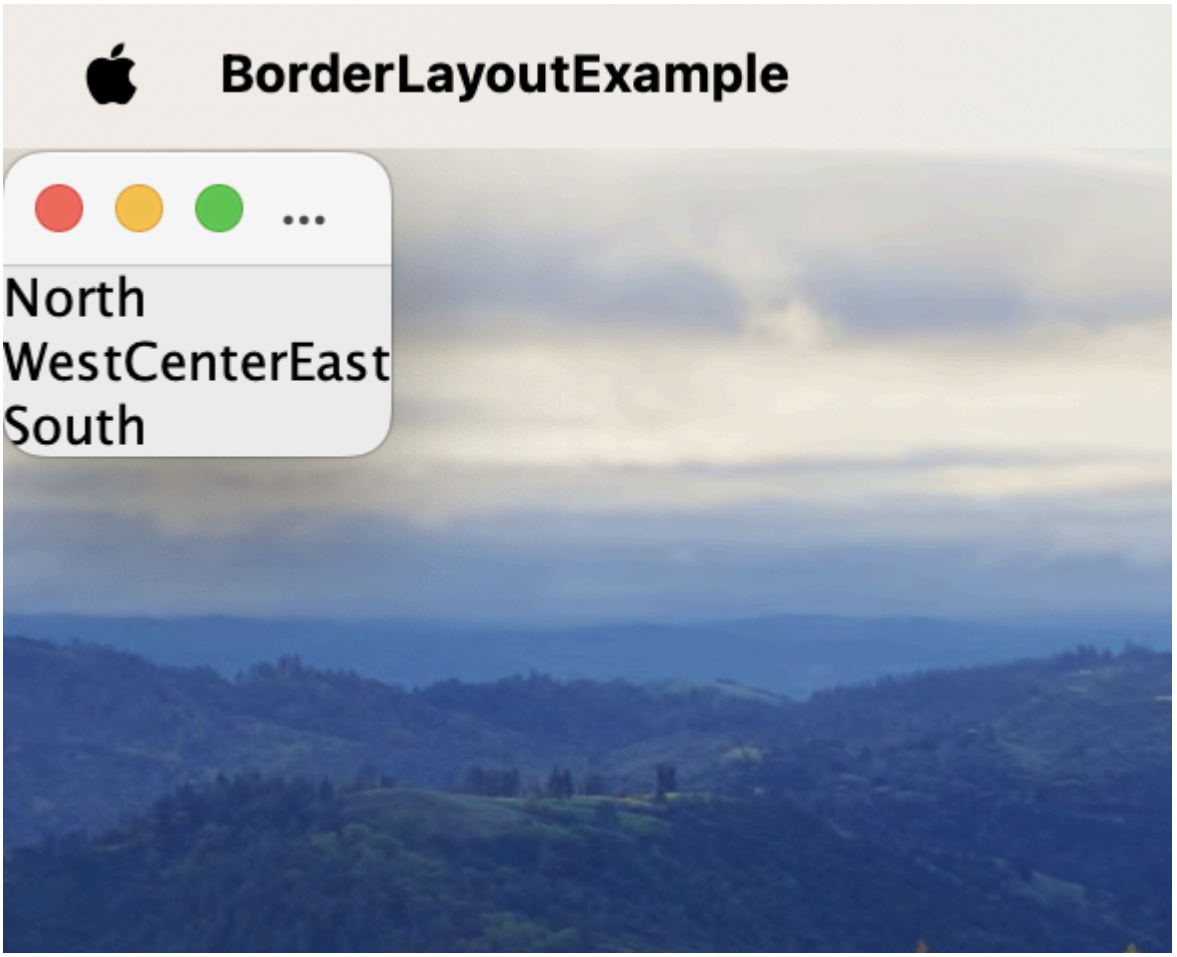
Q9. Create a Swing application to demonstrate the flow layout.

```
import java.awt.FlowLayout;
import javax.swing.JButton;
import javax.swing.JFrame;
public class FlowLayoutExample extends JFrame {
    public FlowLayoutExample() {
        setTitle("FlowLayout Example");
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

        setLayout(new FlowLayout());

        JButton button1 = new JButton("Button 1");
        JButton button2 = new JButton("Button 2");
        JButton button3 = new JButton("Button 3");
        JButton button4 = new JButton("Button 4");

        add(button1);
        add(button2);
        add(button3);
        add(button4);
        pack();
        setVisible(true);
    }
    public static void main(String[] args) {
        new FlowLayoutExample();
    }
}
```



Q10. Create a Swing application to demonstrate the border layout.

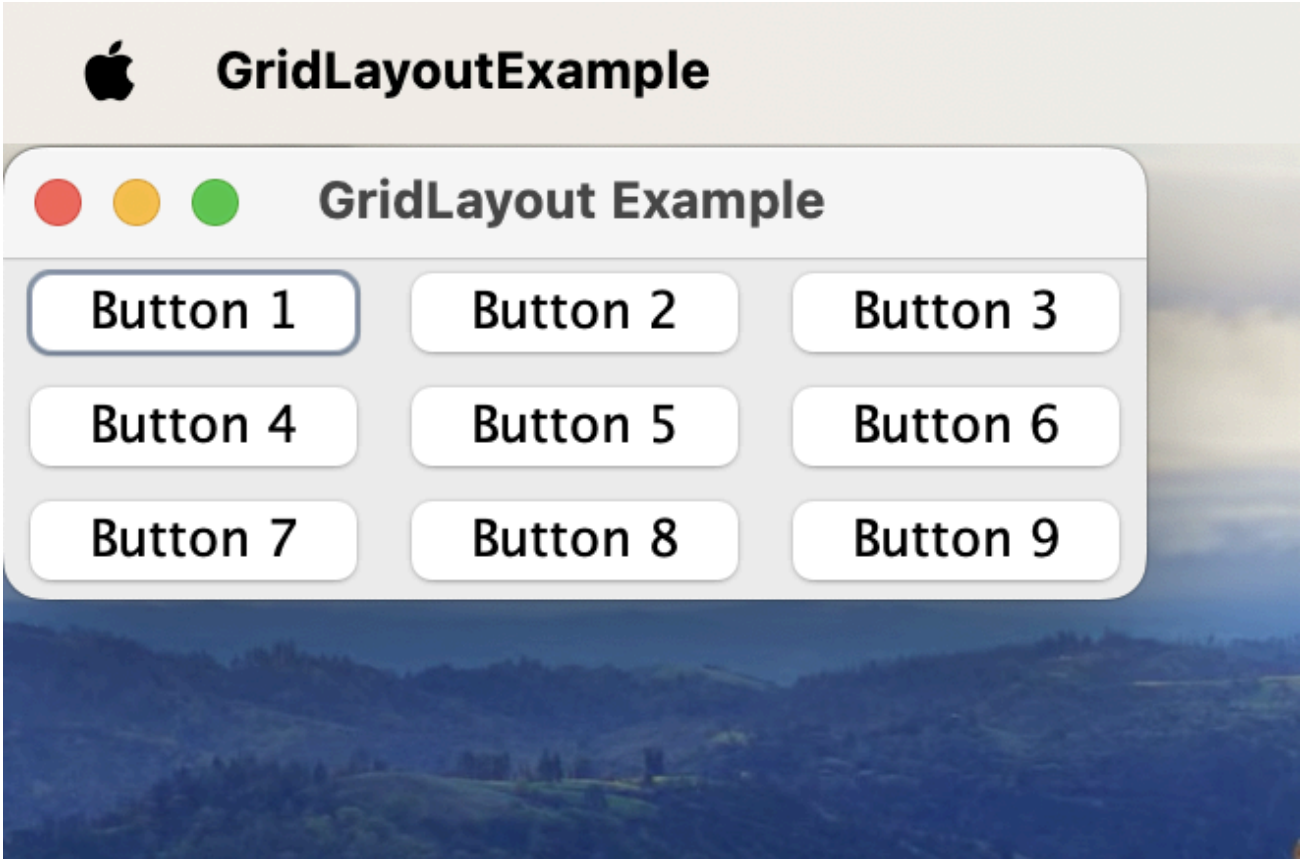
```
import java.awt.BorderLayout;
import javax.swing.JFrame;
import javax.swing.JLabel;
public class BorderLayoutExample extends JFrame {
   public BorderLayoutExample() {
      setTitle("BorderLayout Example");
      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

      setLayout(new BorderLayout());

      JLabel northLabel = new JLabel("North");
      JLabel westLabel = new JLabel("West");
      JLabel centerLabel = new JLabel("Center");
      JLabel eastLabel = new JLabel("East");
      JLabel southLabel = new JLabel("South");

      add(northLabel, BorderLayout.NORTH);
      add(westLabel, BorderLayout.WEST);
      add(centerLabel, BorderLayout.CENTER);
      add(eastLabel, BorderLayout.EAST);
      add(southLabel, BorderLayout.SOUTH);
      pack();
      setVisible(true);
   }
   public static void main(String[] args) {
      new BorderLayoutExample();
   }
}
```



Q11. Create a Swing application to demonstrate the grid layout.

```
import java.awt.GridLayout;
import javax.swing.JButton;
import javax.swing.JFrame;
public class GridLayoutExample extends JFrame {
    public GridLayoutExample() {
        setTitle("GridLayout Example");
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

        setLayout(new GridLayout(3, 3));

        JButton button1 = new JButton("Button 1");
        JButton button2 = new JButton("Button 2");
        JButton button3 = new JButton("Button 3");
        JButton button4 = new JButton("Button 4");
        JButton button5 = new JButton("Button 5");
        JButton button6 = new JButton("Button 6");
        JButton button7 = new JButton("Button 7");
        JButton button8 = new JButton("Button 8");
        JButton button9 = new JButton("Button 9");
```

```
        add(button1);
        add(button2);
        add(button3);
        add(button4);
        add(button5);
        add(button6);
        add(button7);
        add(button8);
        add(button9);
        pack();
        setVisible(true);
    }
    public static void main(String[] args) {
        new GridLayoutExample();
    }
}
```



Q12. WAP that demonstrate the use of JPanel.

```
import java.awt.FlowLayout;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JPanel;
```

```
public class JPanelExample extends JFrame {
   public JPanelExample() {
      setTitle("JPanel Example");
      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

      JPanel panel = new JPanel();
      panel.setLayout(new FlowLayout());
      JButton button1 = new JButton("Button 1");
      JButton button2 = new JButton("Button 2");
      JButton button3 = new JButton("Button 3");

      panel.add(button1);
      panel.add(button2);
      panel.add(button3);

      add(panel);
      pack();
      setVisible(true);
   }
   public static void main(String[] args) {
      new JPanelExample();
   }
}
```